

Michael J. McGrady, WSB No. 6-4099
Senior Assistant Attorney General
Jeremy A. Gross, WSB No. 7-5110
Assistant Attorney General
Wyoming Attorney General's Office
123 State Capitol
Cheyenne, Wyoming 82002
(307) 777-6946
(307) 777-3542 facsimile
mike.mcgrady@wyo.gov
jeremy.gross@wyo.gov
Attorneys for Petitioner State of Wyoming

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF WYOMING**

STATE OF WYOMING,

Petitioner,

v.

UNITED STATES DEPARTMENT OF
THE INTERIOR; SALLY JEWELL, in her
official capacity as Secretary of the Interior
UNITED STATES BUREAU OF LAND
MANAGEMENT; and NEIL KORNZE, in
his official capacity as Director of the
Bureau of Land Management

Respondents.

Case No. 15-CV-00043-SWS

**THOMAS A. KROPATSCH
AFFIDAVIT**

Thomas A. Kropatsch, being first duly sworn, deposes and states of his own knowledge:

1. I am the Deputy State Oil and Gas Supervisor for the Wyoming Oil and Gas Conservation Commission ("WOGCC"). I have knowledge of the facts set forth herein either from my own personal knowledge, or from the records of the WOGCC, and am competent to testify thereto.

BACKGROUND, EDUCATION, AND RELEVANT EXPERIENCE

2. I graduated with a Bachelor's of Science Degree in Geology from Oklahoma State University in 1999. I am also a registered Professional Geologist in the State of Wyoming (P.G. #3720).

3. Prior to joining the WOGCC, I worked in the environmental consulting industry for Delta Consultants (now known as Antea Group). I began with Delta in 2001 as a Staff Geologist and worked in several roles including Staff Geologist, Project Geologist, and Project Manager. These positions were based in Delta's Colorado office but included projects throughout the Great Plains and Rocky Mountain States. Much of this work included investigation and remediation of petroleum hydrocarbon impacted soils and groundwater at pipeline, terminal, and underground storage tank sites.

4. I began working with the WOGCC as a Natural Resource Analyst in May 2010. In this position I was responsible for the implementation and regulation of the WOGCC environmental programs as well as ensuring that oil and gas operators complied with the WOGCC's Rules and Regulations. This position included providing technical and regulatory assistance on remediation and/or disposal of exploration and production generated wastes, and spill response and remediation assistance to oil and gas operators within the state. I also acted as the Commission Hearing Examiner for Underground Injection Control ("UIC") Class II injection and disposal wells and reviewed applications from companies seeking approval to chemically or mechanically treat pits or wastewater.

5. In January 2013 I moved into the Natural Resources Program Supervisor role with the WOGCC. This position included supervising WOGCC inspectors, natural resource

analysts, specialists, and technicians. These staff conduct oversight, review, and approvals of nearly all tasks in oil and gas exploration and production including pre-drilling onsite reviews, drilling and completions inspections, spill response and remediation, plugging and abandonment, and site reclamation. In this position I also acted as the Class II UIC Program Director for the WOGCC. As the Natural Resources Program Supervisor I was also responsible for interaction with other state and federal agencies that regulated or were impacted by the energy industry.

6. In August 2014 I was named the Deputy State Oil and Gas Supervisor. In this position I support the State Oil and Gas Supervisor on energy issues that may affect the agency, the state, and the industry. Since appointed to this position I have continued to act as the Natural Resource Program Supervisor and as the Class II UIC Program Director.

7. While working with the WOGCC I have been involved in hydraulic fracturing issues on local and national levels. In 2012 and 2013 I was invited by the EPA to participate on a technical roundtable and technical workgroups as part of their hydraulic fracturing study titled Hydraulic Fracturing for Oil and Gas and Its Potential Impact on Drinking Water Resources. In April 2014 I was invited by EPA to be a member of their UIC National Technical Workgroup, which is a group of EPA UIC program technical staff and six state members that researches and prepares various guidance documents on topics related to the UIC program. The most recent product from the EPA UIC National Technical Workgroup was a report on minimizing and managing injection induced seismicity from Class II disposal wells. Additionally, I have been invited to participate in other workgroups, committees, and technical meetings related to

hydraulic fracturing and unconventional oil and gas production by groups such as the National Governor's Association and the Aspen Institute. My local involvement with hydraulic fracturing includes implementation of the WOGCC's rules on hydraulic fracturing; rule evaluation, rulemaking, and rule implementation of other protective measures such as the WOGCC baseline groundwater sampling program; and review, evaluation, and approval of wastewater handling, storage, and disposal/treatment methods.

HOW WYOMING REGULATES HYDRAULIC FRACTURING

8. Wyoming was one of the first states to update its rules on hydraulic fracturing and became the first state in the nation to require chemical disclosure of hydraulic fracturing fluids when it enacted its September 2010 rule changes. The Wyoming hydraulic fracturing rule is located in Chapter 3, Section 45 of the WOGCC Rules and Regulations, which is available at: <http://soswy.state.wy.us/Rules/RULES/9584.pdf>.

9. Under the rules, oil and gas operators must submit a hydraulic fracturing plan to the WOGCC either with an application for permit to drill (APD), on a sundry notice, or as a comprehensive master drilling/completion/recompletion plan (master plan). If an operator needs to revise a previously submitted plan they can do so by providing the WOGCC with an amended APD, a new sundry notice, or a revised master plan.

10. Prior to hydraulically fracturing a well the WOGCC rules require the operator to submit the following information with its hydraulic fracturing plan: (1) the

geologic names, geologic description and depth of the formation(s) into which well stimulations fluids are to be injected; (2) detailed information as to the base stimulation fluid source; (3) chemical additives, compounds, and concentrations or rates proposed to be mixed and injected for each stage of the well stimulation program; (4) stimulation fluid by additive type (such as acid, biocide, breaker, etc.), chemical compound name and Chemical Abstracts Service (CAS) number, proposed rate or concentration of each additive (such as pounds per thousand gallons, percent weight, percent by volume, or part per million, etc.); (5) a copy of the service company's proposed program; (6) anticipated surface treating pressure range; (7) maximum injection treating pressure; (8) estimated or calculated fracture length and height; and (9) any additional information deemed necessary by the Supervisor. Consistent with the Wyoming Public Records Act, the WOGCC may hold confidential trade secrets, privileged information, and confidential commercial, financial, geological, or geophysical data furnished by or obtained from any person. Before the WOGCC will withhold that information, the operator must submit a request to the Supervisor justifying and documenting the nature and extent of the proprietary information.

11. During the hydraulic fracturing operations, it is important that operators monitor pressures within the well in order to maintain safe working conditions and protect groundwater resources. Thus, the WOGCC requires operators to monitor annulus pressure at the bradenhead. If intermediate casing has been set, then pressure in the annulus between the intermediate and production casing must also be monitored and recorded. The operator must submit a continuous record of these measurements with the

completion report or sundry notice. If, during the hydraulic fracturing operations, the annulus pressure increases by more than 500 psi, the owner must notify the WOGCC within 24 hours.

12. Post hydraulic fracturing, the operator or service company is required to submit the following information to the WOGCC: (1) the actual total well stimulation treatment volume pumped; (2) detail as to each fluid stage pumped, including actual volume by fluid stage, proppant rate or concentration, actual chemical additive name, type, concentration or rate, and amounts; (3) the actual surface pressure and rate at the end of each fluid stage and the actual flush volume, rate and final pump pressure; and (4) the instantaneous shut-in pressure, and the actual 15-minute and 30-minute shut-in pressures when these pressure measurements are available. In lieu of the described requirements, the operator may submit the actual well stimulation service contractor's job log or an operator representative's well treatment job log or any report providing the above required information. The WOGCC may withhold some of this information as confidential if any of it describes the owner or operator's proprietary completion design and/or well stimulation design.

13. On the completion report or sundry notice, the operator must inform the WOGCC as to the amounts of the well stimulation fluid load recovered during flow back, swabbing, and/or recovery from production facility vessels, as well as how the fluid is handled and whether the operator disposed of the flowback fluid or reused it. Storage of the fluid must be protective of groundwater as demonstrated by the use of either tanks or lined pits.

THE WOGCC'S RULE IS MORE PROTECTIVE THAN THE BLM'S RULE

14. One of the main purposes of the WOGCC hydraulic fracturing regulations is to protect groundwater. However, the WOGCC rule is more protective of groundwater than the BLM rule for four major reasons. First, and most important, is the pre-hydraulic fracturing chemical disclosure. As stated in WOGCC rules Chapter 3, Section 45(g):

The injection of volatile organic compounds, such as benzene, toluene, ethylbenzene, and xylenes (BTEX) or any petroleum distillates, into groundwater is prohibited. The proposed use of volatile organic compounds, such as benzene, toluene, ethylbenzene and xylene, also known as BTEX compounds or any petroleum distillates for well stimulation into hydrocarbon bearing zones may be authorized with prior approval from the WOGCC.

Without pre-hydraulic fracturing chemical disclosure WOGCC could not determine, until it was too late, if these compounds were injected into a zone that met the WOGCC definition of groundwater. In reviewing the pre-hydraulic fracturing chemical disclosures, WOGCC commonly denies frack jobs that would inject BTEX compounds or petroleum distillates into groundwater. WOGCC also requires information on the use and depths of surface casing and cementing requirements in order to protect groundwater.

15. The WOGCC defines groundwater as:

Groundwater, for the purposes of the WOGCC rules and consistent with Wyoming Department of Environmental Quality Chapter 8, as revised April 26, 2005, 'Quality Standards for Wyoming Groundwaters', means groundwater will be protected except for Class VI Groundwater of the State that is unusable or unsuitable for use: due to excessive concentrations of total dissolved solids or specific constituents; or is so contaminated that it would be economically or technologically impractical to make water useable; or is located in such a way, including depth below the surface, so as to make use economically and technologically impractical.

Chapter 2, Section 2 of the WOGCC Rules and Regulations.

16. Some shallow coalbed water is used as drinking water in domestic wells throughout the Powder River Basin. Although these areas could be classified as hydrocarbon bearing and as unusable groundwater under the Wyoming Department of Environmental Quality rules, the WOGCC does not allow operators to inject BTEX, VOCs, or petroleum distillates in these shallow zones because the zones are used for drinking water.

17. The BLM rule attempts to address similar situations by including a definition of Usable Water. The BLM rule determines that zones do not contain Usable Water if BLM has authorized hydraulic fracturing, provided that the operator has obtained all other authorizations required by the EPA, the state (for federal lands), or the tribes (for Indian lands), to conduct hydraulic fracturing operations in the specific zones. Thus, regardless of the BLM's determination on whether hydraulic fracturing is authorized, operator's still must submit information to WOGCC to obtain permission to frack the specific zone. Thus, the BLM rule requires an operator to submit two separate hydraulic fracturing plans, one to the BLM and one to the WOGCC to determine if the proposed zone contains Usable Water and to authorize hydraulic fracturing into the zone.

18. The second reason the WOGCC rule is more protective of groundwater is that the BLM's hydraulic fracturing rule does not require compliance with its rule for other types of well stimulations. The WOGCC requires compliance with its Chapter 3, Section 45 well stimulation rules for other common types of well stimulation, such as well acidizing. This type of operation commonly injects acid and various other chemicals to clean scale, rust and other material from well perforations and formation fractures or to

dissolve formation rock to enhance or create new flow pathways. The WOGCC rule is more protective because it is more inclusive than the BLM's rule.

19. Third, the new surface setback rule recently passed by the WOGCC is also more protective of nearby structures than the BLM's hydraulic fracturing rule. The BLM rule allows pits, and presumably other surface equipment on a well pad, to be located within 300 feet of a residence, school, park, etc. The WOGCC regulation requires that wellheads and Production Facilities (pits, pumps, compressors, tanks, etc.) be at least 500 feet from an occupied structure and requires mitigation plans if the operation is within 1,000 feet of an occupied structure, both more stringent than the BLM rules.

20. The fourth major area that the WOGCC rule differs from the BLM rule is the WOGCC's requirement that operators submit data on a stage-by-stage basis versus a total job basis. The WOGCC requires operators to report chemicals, volumes, rates or concentrations, and pressures for each stage of the hydraulic fracturing operation and also requires total job treatment volumes. The BLM rule only requires operators to submit this information on a total job basis. Many of the hydraulic fracturing operations currently being conducted in Wyoming contain up to 40 or 50 total frack stages so the additional individual stage-by-stage detail is beneficial, not only for environmental protection, but also for industry knowledge in analyzing and optimizing these hydraulic fracturing operations.

21. This stage-by-stage information is also useful to WOGCC in examining the occurrence of "frack hits." Frack hits occur when hydraulic fracturing of one well encounters or hits a nearby well or fault. This nearby well or fault may provide a pathway

for fluids to flow to shallower zones or to the ground surface. By examining volume and pressure records on a stage-by-stage basis, operators and the WOGCC may be able to determine if hydraulic fracturing operations did in fact create a “frack hit.” Examining a hydraulic fracturing operation on a total job basis, as BLM proposes, will not provide the level of detail required to make this determination.

THE STATE OF WYOMING IS IN THE BEST POSITION TO REGULATE

22. In addition to Wyoming being one of the first states to implement or update its hydraulic fracturing regulations, it has been described as one of the states that meets or exceeds the BLM hydraulic fracturing rule. Even Secretary of the Interior, Ms. Sally Jewell, has said that states that already have strong regulations for oil and gas development, such as Wyoming and Colorado, could be given room under the federal rules to enforce their own regulations. Others have said the rule will respect the work previously done by industry, the states, and the tribes.

23. The WOGCC is the most appropriate agency to regulate hydraulic fracturing within the state. The WOGCC implemented its rule in 2010 on federal, fee, and state lands. The WOGCC has one office located within the state so all staff involved in review of hydraulic fracturing plans are able to work together, which provides several advantages.

24. First, the WOGCC is able to respond to operators in a timely manner, which is essential to industry, especially in relation to hydraulic fracturing plans. The scheduling of hydraulic fracturing jobs can be difficult for operators. Many times an operator, especially the smaller ones, will be on a waiting list for one or more service

providers and may receive short notice on availability for the next job. In cases such as this, there are routinely last minute changes to the hydraulic fracture plans based on the actual service provider that is being used. The ability of the regulating agency to quickly respond to the specific service provider's hydraulic fracture plan allows the operator to move forward with the work.

25. Second, having the staff all in the same office provides consistency in review and approval. All operators in all areas of the state receive consistent response time, consistent answers, and consistent conditions of approvals to the plans. Providing consistent responses to the operators gives them certainty related to the requirements of the plans.

26. The BLM does not have a centralized office location and does not always provide consistent responses. This makes it very difficult on operators who work with different field offices in different parts of the state to understand how to submit an approvable plan. There are many reports from industry that even with current federal regulations, different BLM field offices will provide different responses to the same requests and many times the operators will receive different responses within the same field office depending on which staff person is responding. The WOGCC staff has also witnessed varying requirements from the BLM for the same work in areas where the state and federal regulatory responsibilities overlap. An example of this is pit closure requirements, where different field offices will require an operator to analyze soil samples for different constituents or set different cleanup concentrations for the same types of pits holding the same types of material.

27. The length of time that will be added to the drilling and completion of wells waiting on the BLM to approve these hydraulic fracturing plans will put industry in Wyoming at a disadvantage since many of the wells involve federal lands or minerals. Currently the WOGCC approves APDs with hydraulic fracturing plans within 60 days of submittal. If an operator submits the hydraulic fracturing plan separately from the APD, such as via sundry notice, the WOGCC approval time is typically less than a week, but can be granted in a matter of hours if necessary. According to Western Energy Alliance, the BLM takes approximately 200 days to approve an APD. With the additional workload of reviewing the hydraulic fracturing plans, this BLM wait time can reasonably be expected to increase. It is unknown how much time this additional burden will add to BLM sundry approval time, but it could be lengthy.

28. Wait times are key because it is common for an operator to require nearly immediate approval for last minute revisions to a previously approved plan. This occurs routinely due to changes to the pre-fracture chemical disclosure; service companies may substitute one chemical for another or an operator may propose using a different service company because they could get on the schedule quicker than with the originally proposed company. The WOGCC is able to accommodate these revisions and can approve them within hours if necessary. Adding duplication, lengthy periods of wait time, and variability between BLM field offices will only create confusion between the agencies and industry.

29. Much of the BLM rule closely follows the WOGCC rules that have been in place since 2010. Since the rules are similar, the BLM will now require copies of much of

the same information that the WOGCC has reviewed for the past five years. An operator will be required to submit an application to both the WOGCC and the BLM for review and approval. The WOGCC will require operators to continue to submit requests for approval of hydraulic fracturing plans to the State on federal lands because the BLM's rule is not as protective of the WOGCC rule.

30. The BLM has no ability to electronically disclose any of the reviewed information, other than the post-hydraulic fracture chemical disclosure, which are posted to FracFocus. FracFocus will only accept post-hydraulic fracturing chemical disclosure on a total job basis. Because of Wyoming's regulations, the WOGCC would still need to accept pre-fracturing chemical disclosure and would also have to accept individual frack stage information pre/post-hydraulic fracturing operations. In addition, the only option for the public or other state or federal agencies to review this information would be to physically visit the public records room in each of the ten BLM field offices in Wyoming. No electronic records would be available other than what is submitted to FracFocus.

31. The BLM's definition of Usable Water will require the WOGCC to first review many of the hydraulic fracturing plans and determine if the proposed zone meets the definition of groundwater in the WOGCC rule. If so, then the WOGCC would need to review the proposed hydraulic fracturing plan chemical disclosure to determine if the company plans to inject any of the chemicals prohibited by the WOGCC. Since the BLM's rule does not allow BLM to make this determination, the WOGCC would always be required to review these applications. Several of the common formations that companies currently target for fracturing operations have variable water quality, meaning

they may or may not be considered Usable Water under the BLM's definition. WOGCC cannot know for sure without a water sample from each well to determine the water quality at that specific location. Operators will either need to obtain authorization from WOGCC for all wells or they must endure a lengthy waiting period while they collect water samples and then submit the samples for analysis to determine if state authorization is necessary. It is not practical, in the middle of completing a well, to add this step and potentially a two week waiting period for a water analysis to be completed.

32. The duplication of effort, including the overlap between the WOGCC and BLM even if a variance were granted, and the length of time that it will take BLM to review these applications, puts operators proposing to hydraulically fracture wells on federal lands at a disadvantage. It also puts the State at a disadvantage if operators decide to invest in their operations in areas not affected by the BLM instead of drilling and completing these wells in Wyoming.

33. The BLM hydraulic fracturing regulation provides no additional safety or environmental protection within the State of Wyoming. In fact, because the BLM rule does not require pre-fracturing chemical disclosure, does not require stage-by-stage reporting, has less stringent setback requirements, and does not include the protections found in the WOGCC rules, such as baseline groundwater monitoring, the BLM rule is actually less protective than the WOGCC regulations.

THE VARIANCE PROCESS DOES NOT RESOLVE THESE ISSUES

34. Wyoming initially thought that some of this duplication could be alleviated by the WOGCC requesting a variance to implement the rule. But Wyoming has since

discovered that, in spite of the comments and language from Secretary of the Interior Jewell and others at the BLM, the way the BLM envisions a variance to work with this rule is not actually a variance, but is further duplication. The variance process would not allow the WOGCC to implement the rule on behalf of BLM, but would allow the BLM to increase their rules to add on the state's requirements that are more stringent than the BLM's. On the surface this may appear to alleviate duplication by allowing the BLM to review and approve these plans on behalf of the state, but for several reasons this is not the case.

35. The BLM rule allows for a state, tribe, or operator to request a variance if they meet or exceed the BLM rule. Upon publication of the BLM rule in the Federal Register the WOGCC staff met with the BLM state office in Cheyenne on March 25, 2015, to discuss the possibility of the state signing a memorandum of understanding (MOU) with a variance. The BLM state office staff stated that they were seeking clarification from Washington, D.C. on what a variance actually means. Two days of additional meetings were held with BLM state office staff from April 22-23, 2015, to further discuss the potential for a variance and an MOU.

36. Wyoming initially thought, based on statements by the BLM at the time it released the rule and in various comments since then, that the states would be able to request a variance from the BLM rule as long as the state regulation met or exceeded the spirit of the BLM rule. At the April 2015 meeting the BLM state office staff notified the WOGCC that a variance was not meant to allow the state agency to implement the hydraulic fracturing rule as alluded to by Secretary of the Interior Jewell and BLM staff.

Instead a variance would allow the BLM to enforce the State's regulations where a state meets or exceeds the federal regulation. What the BLM variance provision actually does is grant the BLM a variance from its own rule allowing it to enforce a state's stricter regulation. It does not allow the state to enforce its own regulation on federal lands in lieu of the BLM, even if more stringent than the BLM rule. The BLM's variance provision only increases duplication of hydraulic fracturing plans making it more difficult for an operator to submit an application, increasing the regulatory uncertainty and increasing the time it takes for approval.

37. The inability of a state to obtain an actual variance that would allow the state to be the sole regulator of hydraulic fracturing harms the state and the industry in multiple ways. In the most basic sense, the duplication caused by the BLM rule harms the WOGCC by requiring staff time to review an application that is also being reviewed by another agency. Even if the State signed an MOU allowing the BLM to increase its regulation to meet the WOGCC rule, the WOGCC staff will still be required to review and approve the hydraulic fracturing plans due to the BLM's definition of Usable Water, the difficulties with public access, and other reasons detailed in this document.

THE BLM'S RULE DIRECTLY HARMS THE STATE OF WYOMING

38. All horizontal wells drilled in Wyoming are hydraulically fractured. Most other directional wells and vertical wells are also hydraulically fractured. Based on data collected by the WOGCC since the state's hydraulic fracturing rule implementation in 2010, over 3,300 hydraulic fracturing operations have occurred on federal wells. Based on 2014 production data, approximately 75% of the gas produced in Wyoming comes

from federal minerals and approximately 55% of the oil produced in Wyoming comes from federal minerals.


39. Many of the oil and gas companies in Wyoming also have operations in other states. Many of these other states, such as Texas, Pennsylvania, and Oklahoma, have much less federal land or federal minerals than Wyoming. This rule will not affect the operations of these companies in these other states to the magnitude that it will in Wyoming. In Wyoming the duplication of effort and potentially long wait times for approval will encourage these operators to invest more money in wells in other states that are not affected by the BLM rule. Given the oil pricing climate that currently exists, operators will invest more money in areas that will provide a better rate of return on their investment. If these operators invest money elsewhere, it may cause the transfer of jobs out of state or create layoffs in Wyoming.

40. The practice of horizontal well drilling will further complicate approval of hydraulic fracturing plans. More and more of the proposed wells the WOGCC encounters pass through a mixed mineral ownership pattern by drilling through and producing from a mix of federal, fee, and state minerals in the same wellbore. The uncertainty and potentially long wait times for BLM approval of hydraulic fracturing operations may act as encouragement for operators to exclude federal minerals from the planned well. This will potentially strand the federal minerals, leaving them out of the production of the well, creating waste of the resource and lost revenue and taxes to Wyoming. WOGCC has already seen several cases of federal minerals being excluded from drilling and spacing units due to the length of time it takes the BLM to approve an APD. Adding

uncertainty and additional wait time for hydraulic fracturing operations may further encourage operators to remove the federal minerals out of the proposed mixed mineral wells.

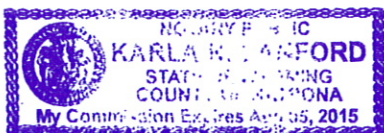
41. Based on the information provided in this document, my involvement in hydraulic fracturing in Wyoming over the past five years, and my education, training, and experience, it is my opinion that the BLM hydraulic fracturing rule will create duplication, uncertainty, and lengthy wait times for approvals of APDs and hydraulic fracturing operations. This will impact the WOGCC by using staff time to duplicate efforts and will encourage operators to exclude federal minerals from proposed wells or to invest in other states not impacted by the BLM rule. The impacts to the energy industry will cost Wyoming lost revenue and jobs.

DATED this 29th day of May, 2015.



Thomas A. Kropatsch

STATE OF WYOMING)
) SS
COUNTY OF NATRONA)

The foregoing THOMAS A. KROPATSCH AFFIDAVIT was subscribed and sworn to before me by Thomas A. Kropatsch this 29th day of May, 2015.



Witness my hand and official seal.


Notary Public

My Commission Expires: 8-5-2015